

## **DETAILED ACTION**

### ***Examiner's comment***

1. The prior rejection has been withdrawn. A new action is being sent to correct the deficiencies of the prior rejection, mainly the prior art did not disclose a fabry-perot structure.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 5, 6, 7, 9-11, 22-26, and 33-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Browning (3980818).

Regarding claims 1 and 22, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability comprising: a retro-reflecting structure (24) including a pair of reflective surfaces (page 6); and a micromechanical device (26) for moving at least one of the reflective surfaces of said pair of reflective surfaces relative to another one of the reflective surfaces of said pair of reflective surfaces a distance which causes the pair of the reflective surfaces to switch between a reflective mode of operation and a transmissive mode of operation (pages 6 and 7) but does not specifically disclose a Fabry-Perot. Browning discloses a fabry-perot retro reflecting structure (col. 7, lines 54-57). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of AAPA with the fabry-perot structure of Browning for the purpose of transmitting the scanning laser output (col. 7, lines 54-57).

Regarding claim 2, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, wherein the retro-reflecting structure includes a corner cube arrangement with the pair of reflective surfaces forming at least one angled reflecting surface of the corner cube arrangement and another reflecting surface forming another angled reflecting surface of the corner cube arrangement (page 6).

Regarding claim 5, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, wherein the micromechanical device is a MEM device (26) (page 7) but does not specifically disclose wherein the MEM device is made using photolithographic techniques. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (fed Cir. 1985).

Regarding claim 6, AAPA discloses, in figures 4A and 4B, an optical retro-reflective apparatus for modulating an optical beam, the apparatus comprising: a retro-reflecting structure including a substrate (44a) moveable grating structure (44b) (page 10); and a micromechanical device (26) moving the moveable grating structure (44b) relative to the substrate (44a) to cause the retro-reflecting structure to switch between a retro-reflective mode of operation and a non-retro-reflective mode of operation, the micromechanical device being responsive to a signal to impart modulation to an optical beam which is retro-reflected from the retro-reflecting structure (pages 10 and 11).

Regarding claim 7, AAPA discloses, in figures 4A and 4B, an optical retro-reflective apparatus for modulating an optical beam, wherein the retro-reflecting structure includes a corner cube arrangement with said substrate and moveable grating structure (44b) forming at least a portion of one reflecting surface of the corner cube arrangement and at least another reflecting surface forming another reflecting surface of the corner cube arrangement (figures 4a and 4b).

Regarding claim 9, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus for modulating an optical beam, wherein said one reflecting surface of said corner cube arrangement is pixelated by a plurality of moveable grating structures (44b) (pages 10 and 11).

Regarding claim 10, AAPA discloses, in figures 4A and 4B, an optical retro-reflective apparatus for modulating an optical beam, wherein the gratings of one moveable grating structure (44b) of said plurality of moveable grating structures is rotated about a central axis thereof related to neighboring moveable grating structures (44b) (pages 10 and 11).

Regarding claim 11, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus for modulating an optical beam, wherein the at least another reflecting surface has a moveable grating structure associated therewith which is responsive to said signal for imparting modulation to the optical beam that is retro-reflected from the retro- reflecting structure (pages 10 and 11 and figures 4a and 4b).

Regarding claim 23, AAPA discloses, in figures 1, 2A, and 2B, an apparatus for retro-reflecting and modulating an optical beam, wherein the retro-reflecting structure includes at least a pair of reflective surfaces, at least one of said surfaces including the at least one optical element which is moved less than a wavelength of the optical beam in order to modulate the retro-reflected beam (pages 6 and 7).

Regarding claim 24, AAPA discloses, in figures 1, 2A, and 2B, an apparatus for retro-reflecting and modulating an optical beam, wherein the pair of reflective surfaces are arranged in either a cat's eye or a corner cube configuration (pages 6 and 10).

Regarding claim 25, AAPA discloses, in figures 4A and 4B, an apparatus for retro-reflecting and modulating an optical beam, wherein the retro-reflecting structure includes a substrate (44a) and a grating structure (44b), at least one of said substrate (44a) and said grating structure (44b) comprising the at least one optical element which is moved less than a wavelength of the optical beam in order to modulate the retro-reflected beam (pages 10 and 11).

Regarding claim 26, AAPA discloses, in figures 4A and 4B, an apparatus for retro-reflecting and modulating an optical beam, wherein the substrate (44a) and grating (44b) are arranged in either a cat's eye or a corner cube configuration (pages 10 and 11).

Regarding claims 33 and 35, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability comprising: first reflective surface; a second reflective surface having a first position in which the retro-reflecting apparatus retro-reflects an optical beam and having a second position in which the retro-reflecting apparatus does not retro-reflect the optical beam (12) (pages 6 and 7); and a micromechanical device (26) operable to move the second reflective surface between the first position and the second position (page 7), wherein the first reflective surface and the second reflective surface are parallel to each other in the first position and the second position (figures 1).

Regarding claim 34, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, wherein the first and second positions being spaced by a distance less than a wavelength of the optical beam (page 11).

Regarding claim 36, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, wherein the substrate is at least partially reflective (page 11).

Regarding claim 37, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, further comprising a partially reflective surface (pages 10).

Regarding claim 38, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, wherein the moveable grating structure (44b) is configured to at least partially reflect an optical beam towards the partially reflective surface (pages 11 and 12).

Regarding claim 39, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, further comprising a partially reflective surface (pages 11 and 12).

Regarding claim 40, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, wherein the moveable grating structure (44b) is configured to retro-reflect an optical beam towards the partially reflective surface when in the first position (pages 10 and 11).

Regarding claim 41, AAPA discloses, in figures 1, 2A, and 2B, an optical retro-reflective apparatus with modulation capability, wherein the retro-reflecting structure includes a first grating structure and a second grating structure, at least one of said grating structures comprises the at least one optical element which is moved less than a wavelength of the optical beam in order to modulate the retro-reflected beam (pages 10 and 11).

#### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1, 2, 5, 6, 7, 9-11, 22-26, and 33-41 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDI N. THOMAS whose telephone number is (571)272-2341. The examiner can normally be reached on Monday - Thursday from 6-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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